

FIG. 1

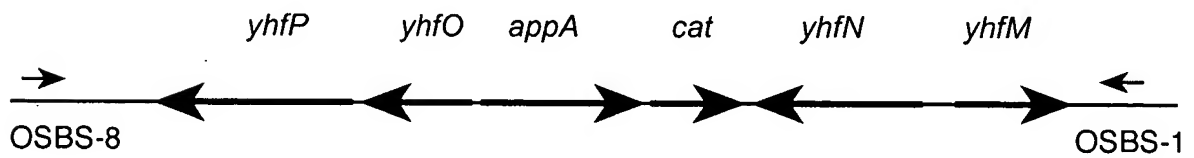


FIG. 2

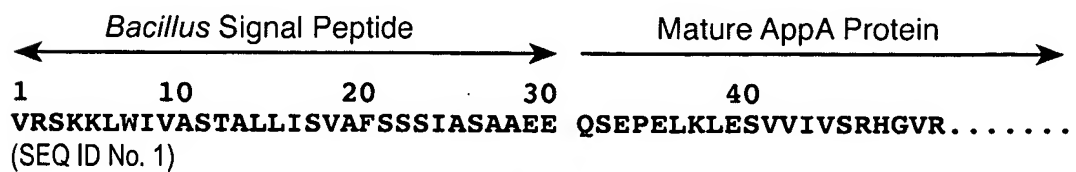
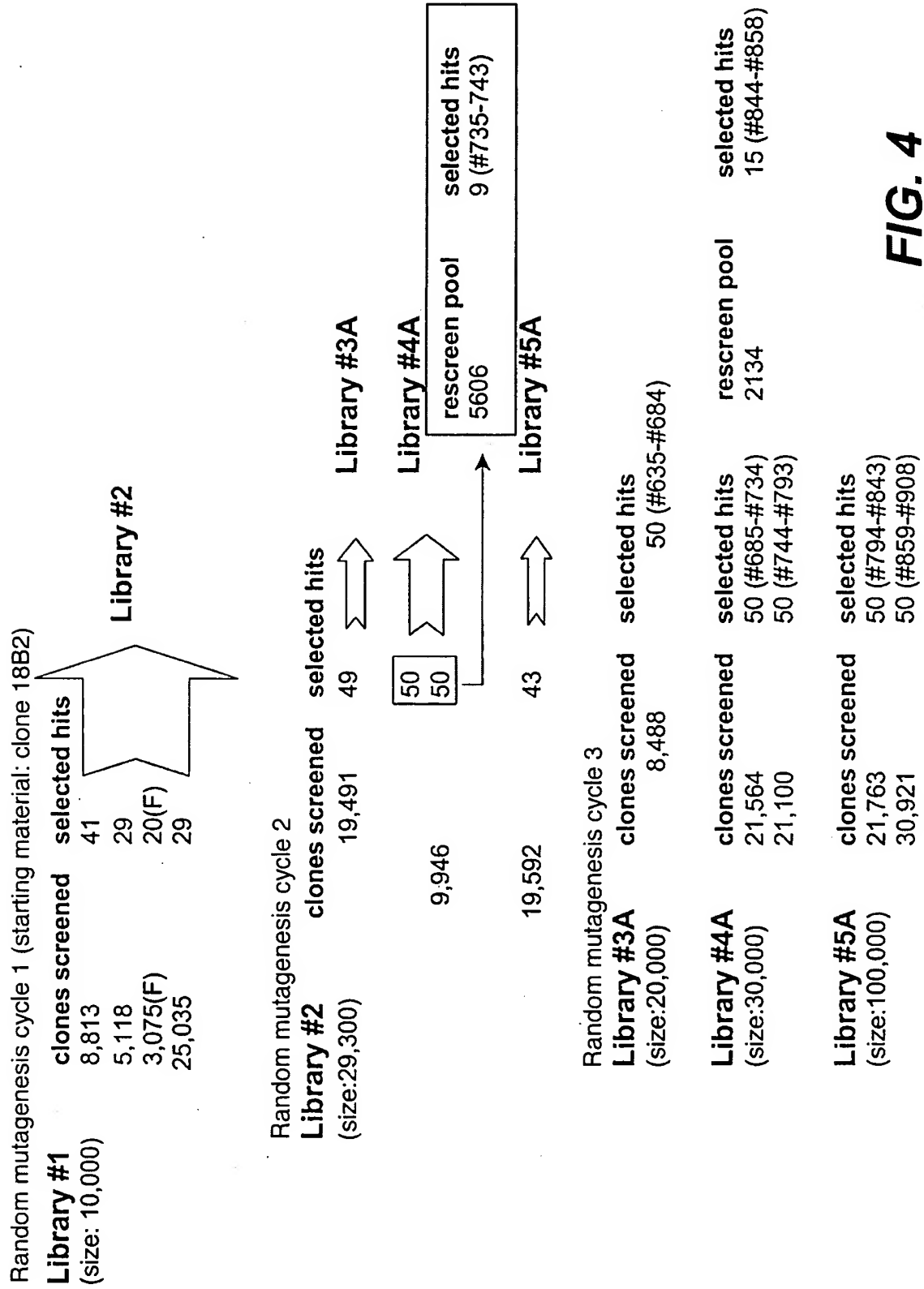


FIG. 3



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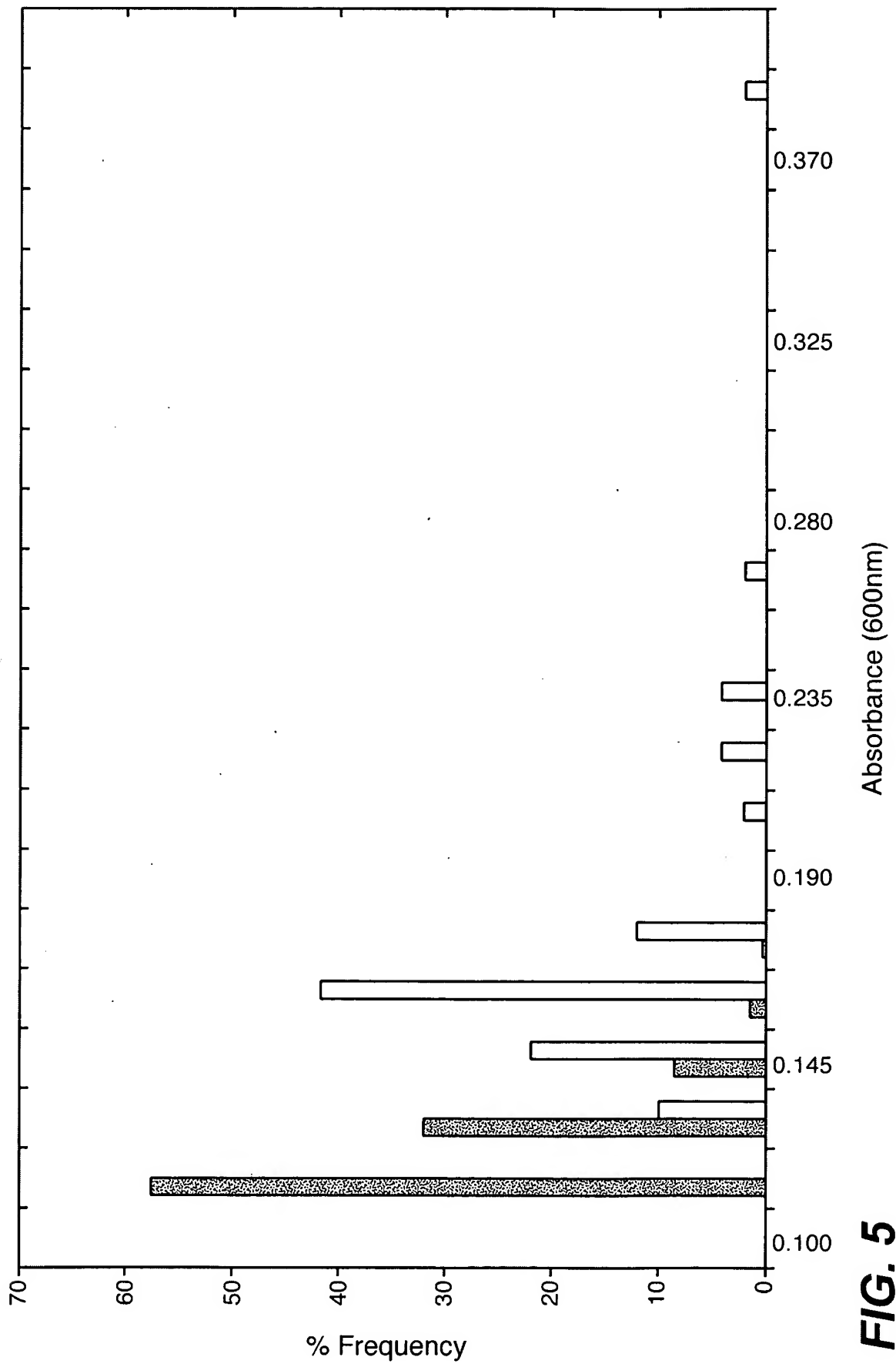


FIG. 5

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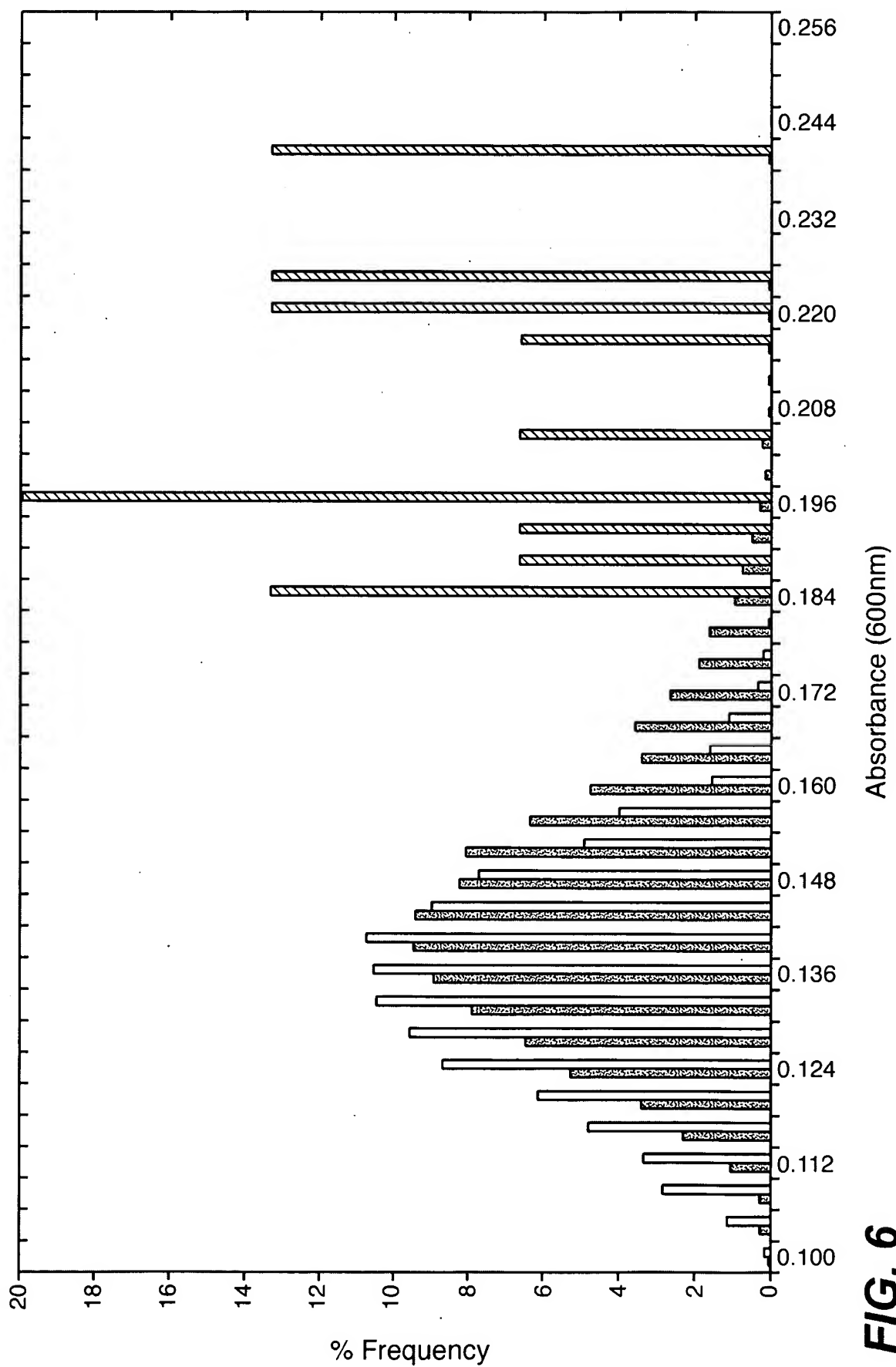
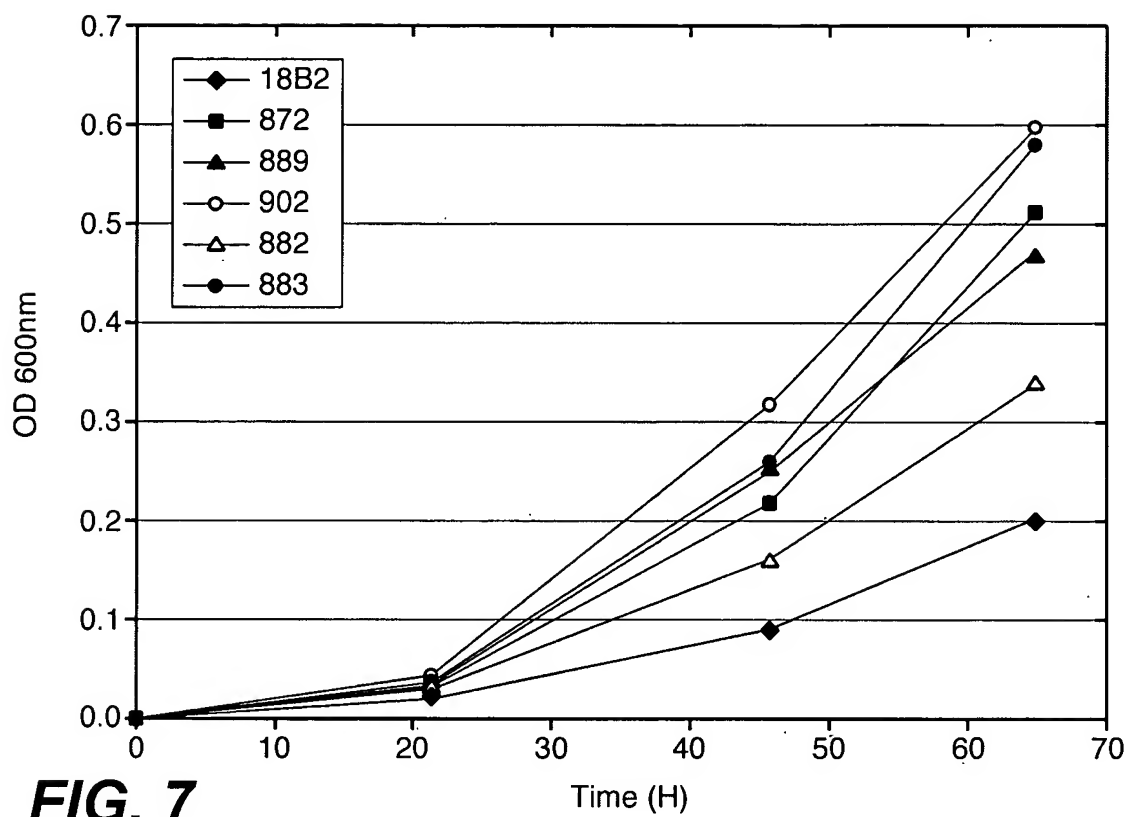
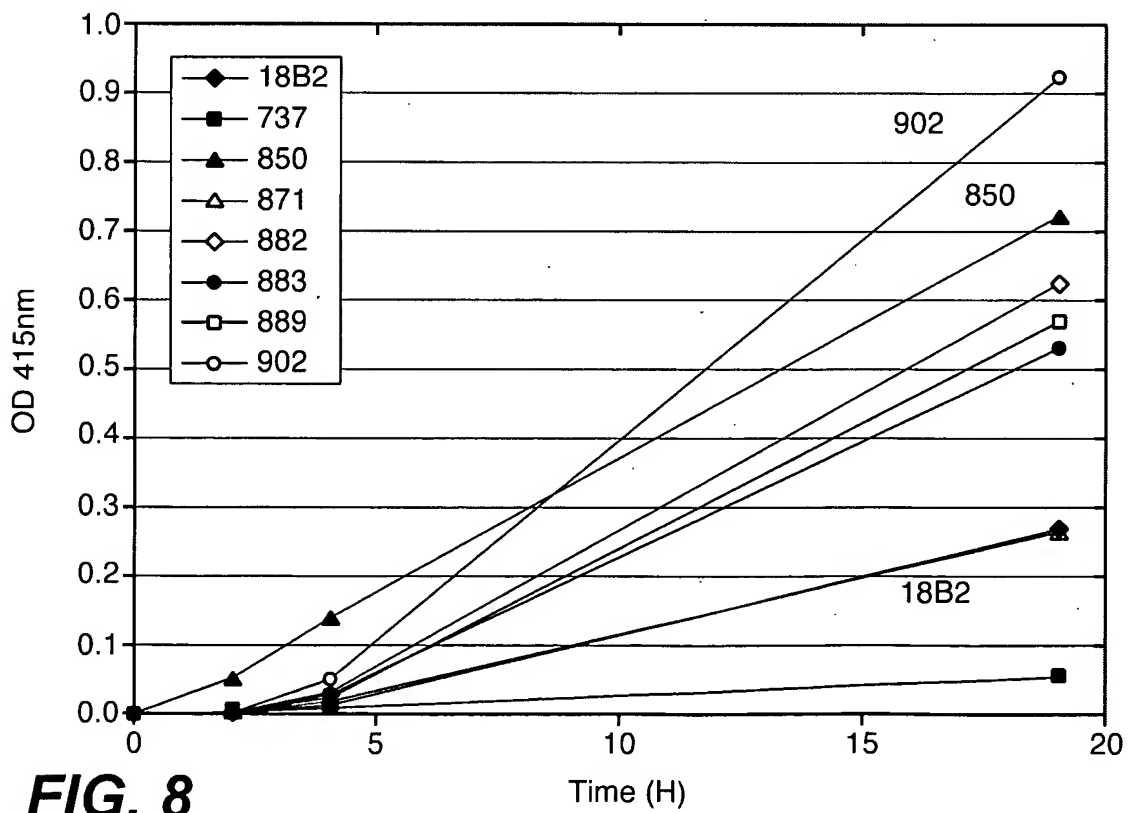
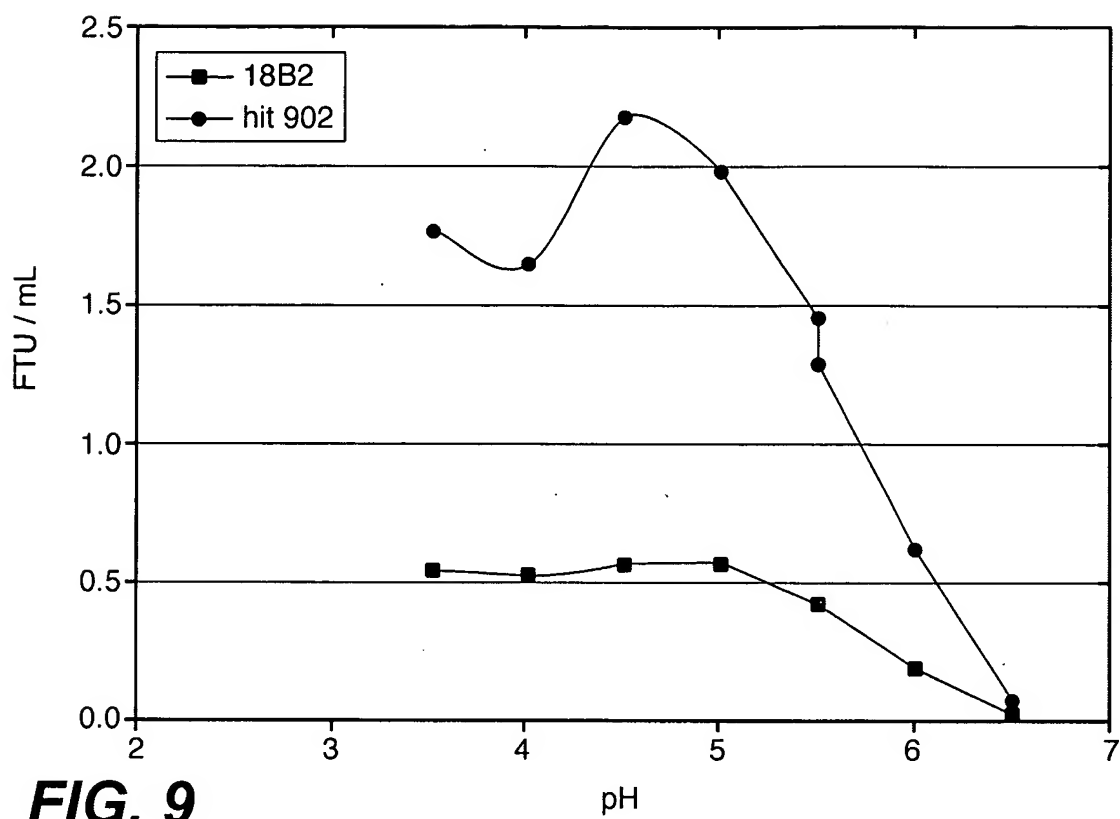
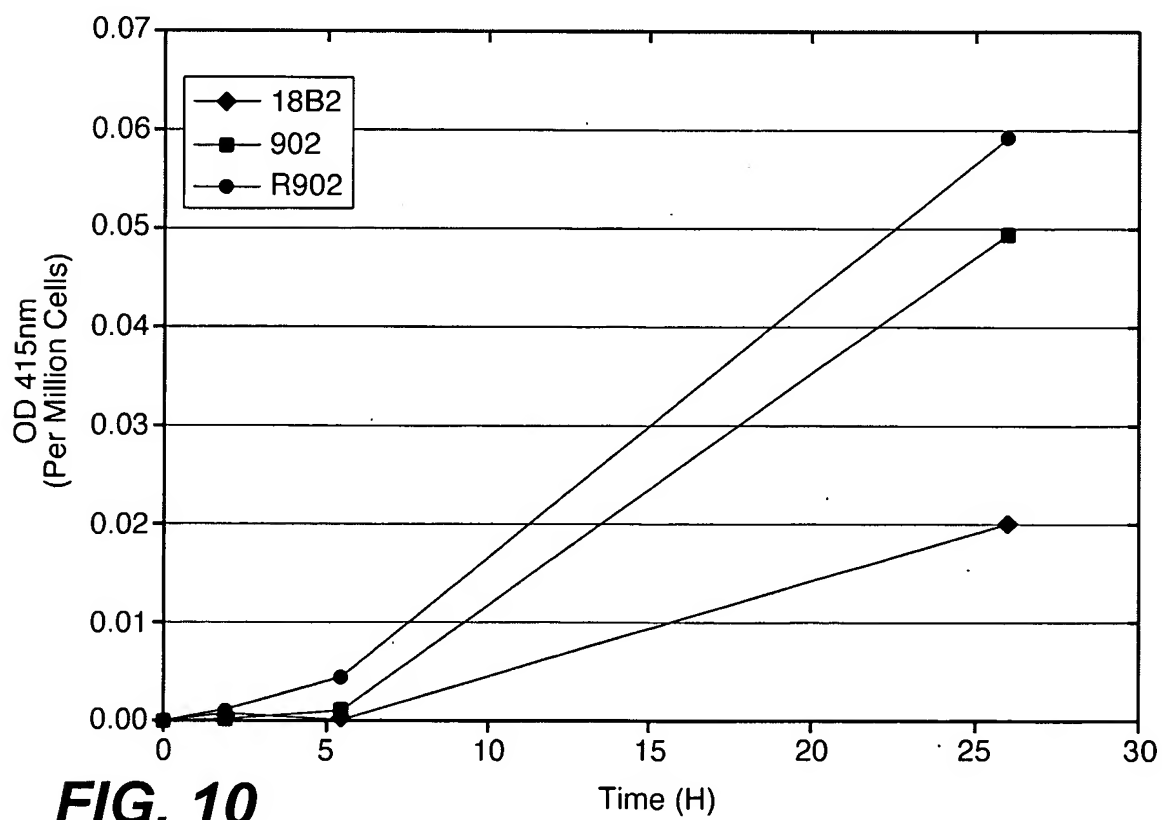


FIG. 6

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**FIG. 7****FIG. 8**

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**FIG. 9****FIG. 10**

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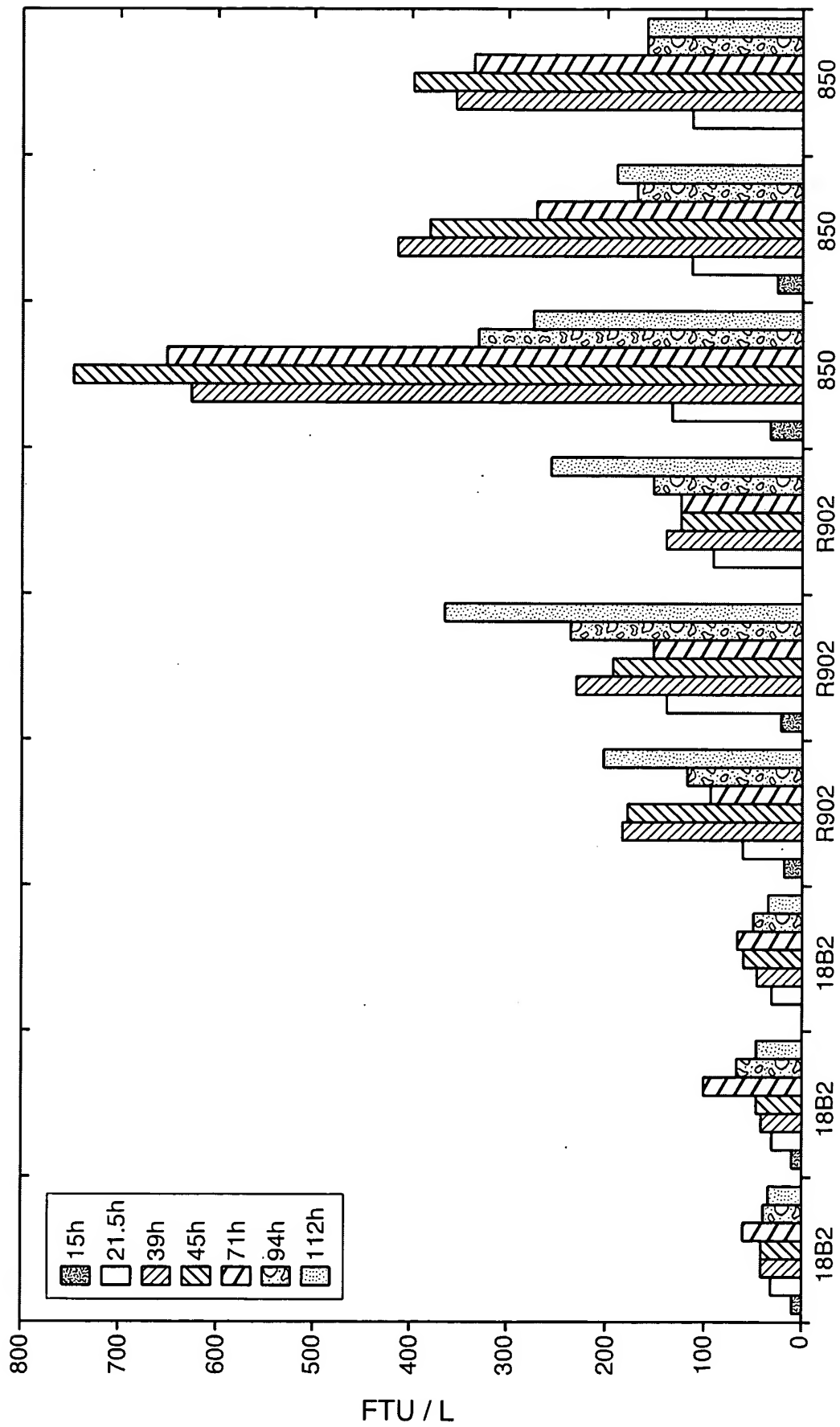


FIG. 11

FIG. 12A

REPLACEMENT SHEET

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	280	290	300	310	320	330	340	350	360	
EBC18B2	HOWNTLLSLHNAQFYLLQRTPEVARSRATPLLDLIKTALT	PHPPQKQAYGVTLPTSVLFIAGHDTNLANLGGALELNWTL	PGQPDNT	PPG	(SEQ ID No. 2)					
PHY679	-----	-----	-----	-----	-----	-----	-----	-----	-----	(SEQ ID No. 3)
PHY735	-----	-----	-----	-----	-----	-----	-----	-----	-----	(SEQ ID No. 4)
PHY736	-----	-----	-----	-----	-----	-----	-----	-----	-----	(SEQ ID No. 5)
PHY846	-----	-----	-----	-----	-----	-----	-----	-----	-----	(SEQ ID No. 6)
PHY850	-----	-----	-----	-----	-----	-----	-----	-----	-----	(SEQ ID No. 7)
PHY902	-----	-----	-----	-----	-----	-----	-----	-----	-----	(SEQ ID No. 8)
	370	380	390	400	410	420	430	440		
EBC18B2	GELVFERWRRRLSDNSQWIOVSLVFQTLQQMRDKT	PLSLNTPPGEVKLTLAGCEERNAQGMCSLAGFTQIVNEARIPACSL	(SEQ ID No. 2)							
PHY679	-----	-----	-----	-----	-----	-----	-----	-----	-----	(SEQ ID No. 3)
PHY735	-----	-----	-----	-----	-----	-----	-----	-----	-----	(SEQ ID No. 4)
PHY736	-----	-----	-----	-----	-----	-----	-----	-----	-----	(SEQ ID No. 5)
PHY846	-----	-----	-----	-----	-----	-----	-----	-----	-----	(SEQ ID No. 6)
PHY850	-----	-----	-----	-----	-----	-----	-----	-----	-----	(SEQ ID No. 7)
PHY902	-----	-----	-----	-----	-----	-----	-----	-----	-----	(SEQ ID No. 8)

FIG. 12B

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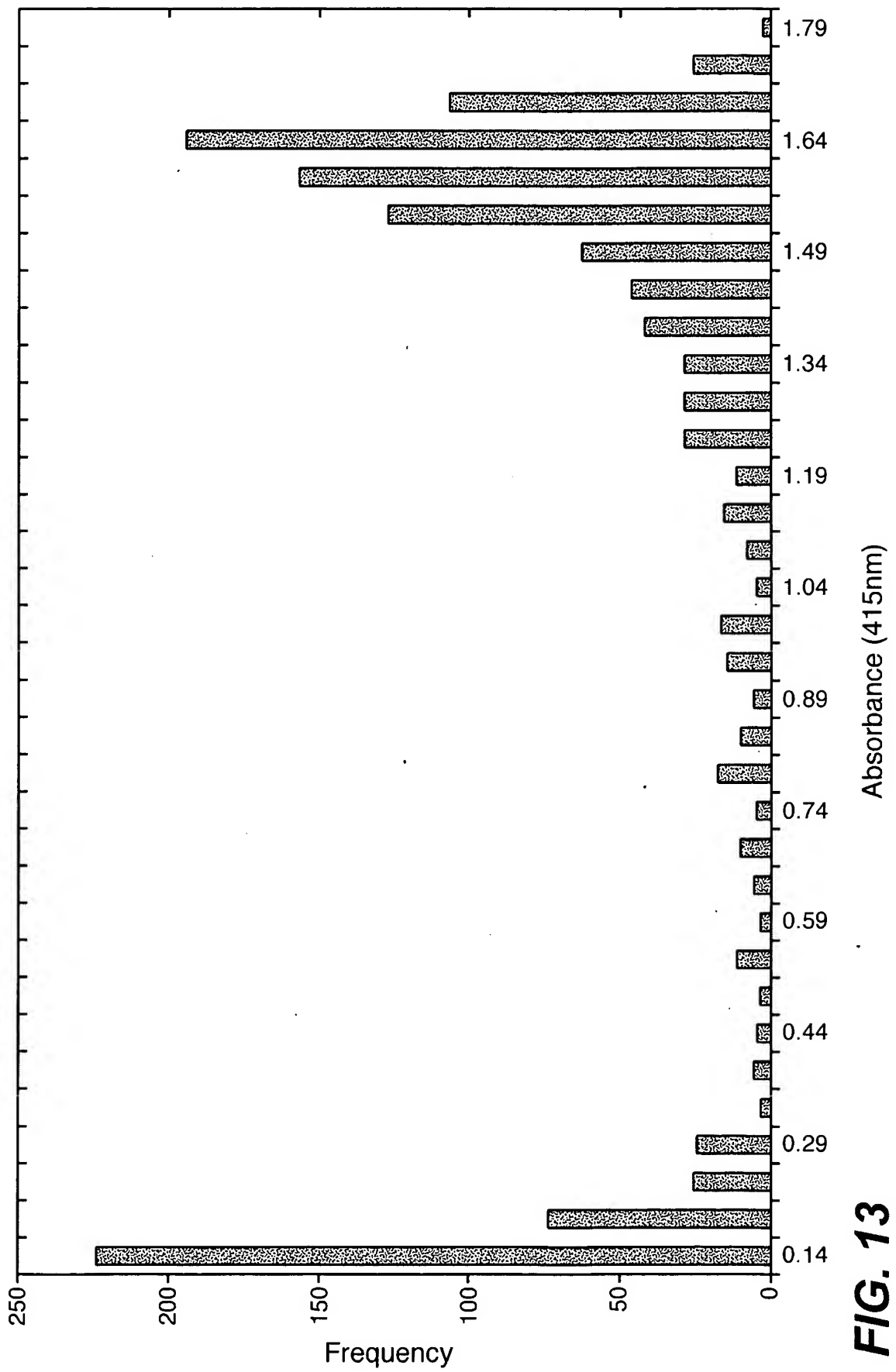


FIG. 13

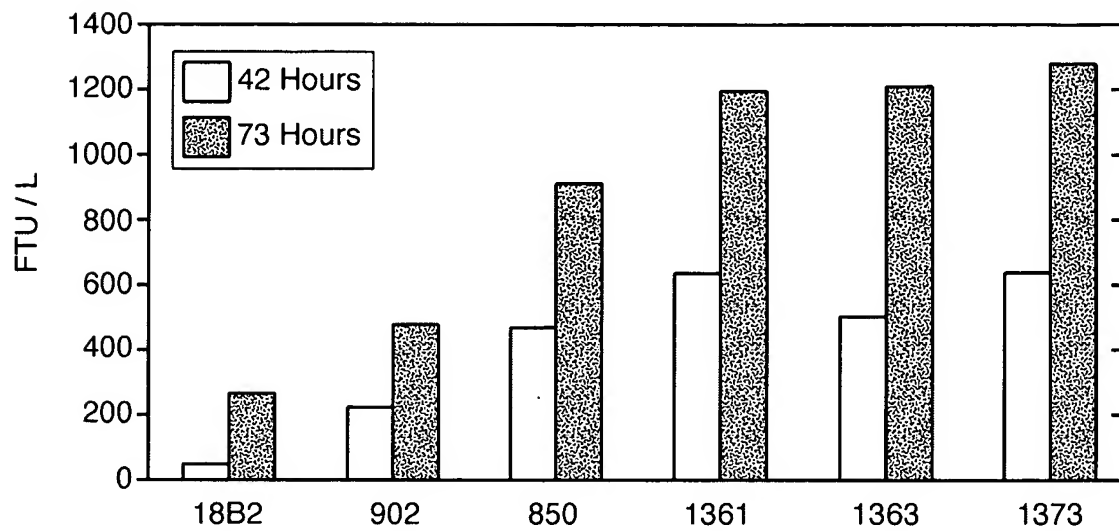
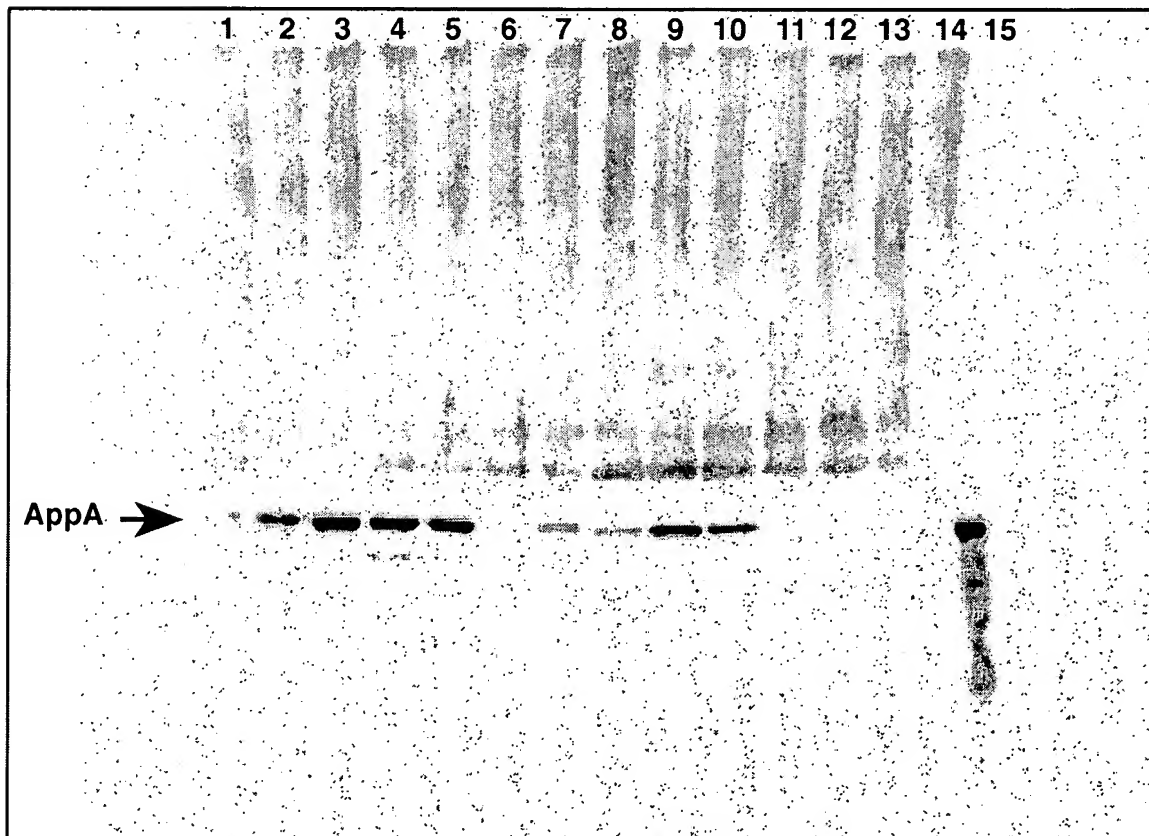
REPLACEMENT SHEET

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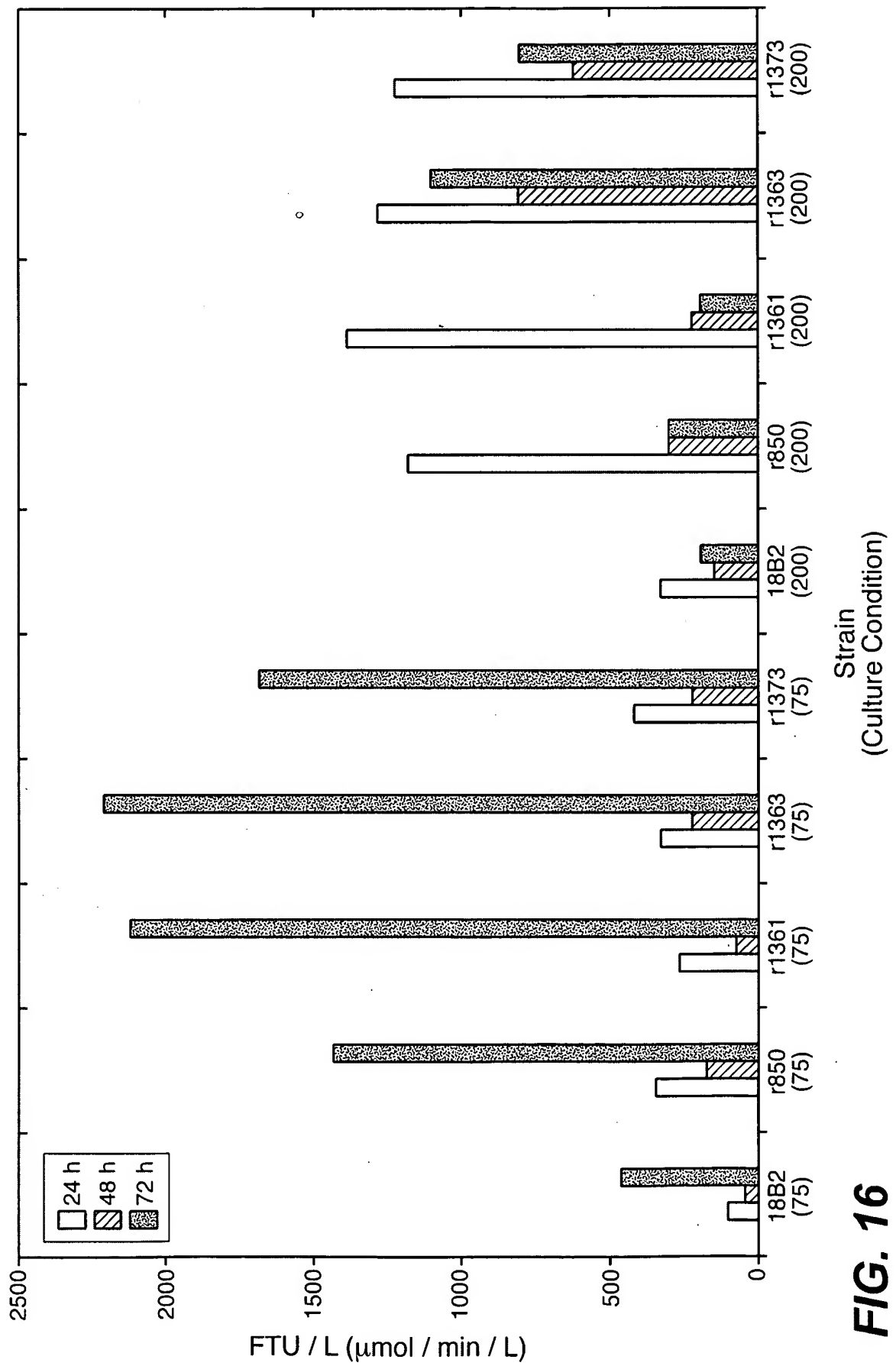
3BC18B2	1	10	20	30	40	50	60	70	80	90	(SEQ ID No. 2)
PHY850											(SEQ ID No. 9)
PHY1361											(SEQ ID No. 10)
PHY1363											(SEQ ID No. 11)
EBC18B2	100	110	120	130	140	150	160	170	180		
PHY850											
PHY1361											
PHY1363											
EBC18B2	190	200	210	220	230	240	250	260	270		
PHY850											
PHY1361											
PHY1363											
EBC18B2	280	290	300	310	320	330	340	350	360		
PHY850											
PHY1361											
PHY1363											
EBC18B2	370	380	390	400	410	420	430	440			
PHY850											
PHY1361											
PHY1363											

FIG. 14

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**FIG. 15****FIG. 17**

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**FIG. 16**

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REPLACEMENT SHEET

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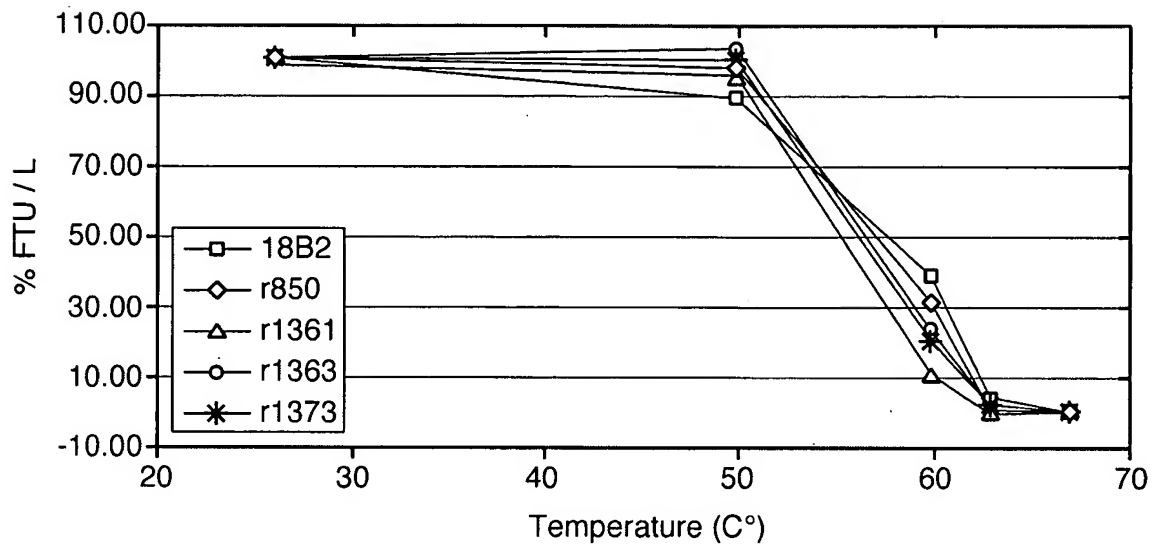


FIG. 18

Oligonucleotide primers and combinations thereof used to amplify *AppA* related sequences.

AppA3F 5' -atgaaagcgatcttaat (SEQ ID No. 12)

AppA5F 5' -cgtcattggtgtgcgtgctcc (SEQ ID No. 13)

AppA6F 5' -cgccagagggtgccc (SEQ ID No. 14)

AppA7R 5' -gcggctggcaacctctgg (SEQ ID No. 15)

AppA4R 5' -ttacaaactgcacgccgggtatgcgtgcgtgcttcatt (SEQ ID No. 16)

Primer combinations:

AppA 3F+4R = 1.3kb product

AppA 3F+7R = 0.86kb product

AppA 5F+4R = 1.19kb product

AppA 6F+4R = 0.44kb product

AppA 5F+7R 0.75kb product

FIG. 19

REPLACEMENT SHEET

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Source	10	20	30	40	50	60	70	80	
<i>E. coli</i>	MKAILIPFLS	LLIPLTPQSA	FAQSEPELKL	ESVVIVSRHG	VRAPTKATQL	MODVTPDAMP	TWPVKLGMLT	PRGGELIAYL	(SEQ ID No. 17)
<i>Shigella flexnarii</i>S	.....	.....	.....	.....	.....	.....F	(SEQ ID No. 18)
<i>Shigella sonnei</i>	(SEQ ID No. 19)
<i>Pasteurella aerogenes</i>	(SEQ ID No. 20)
<i>Enterobacter cloacae</i>F	(SEQ ID No. 21)
<i>Enterobacter agglomerans</i>	(SEQ ID No. 22)
<i>Proteus vulgaris</i>	(SEQ ID No. 23)
Zoo Compost Enrichment	(SEQ ID No. 32)
Source	90	100	110	120	130	140	150	160	
<i>E. coli</i>	GHYQORLVA	DGLLAKGCP	QSGQVAIIAD	VDERTKRTGE	AFAAGLAPDC	AITVHTQADT	SSPDPLENPL	KTGVCOLDNA	(SEQ ID No. 17)
<i>Shigella flexnarii</i>P	.....	.....	.....	.....	.....	(SEQ ID No. 18)
<i>Shigella sonnei</i>	(SEQ ID No. 19)
<i>Pasteurella aerogenes</i>	(SEQ ID No. 20)
<i>Enterobacter cloacae</i>P	.....	.....	.....	.....	.....	(SEQ ID No. 21)
<i>Enterobacter agglomerans</i>P	.....	.....	.....	.....	.....	(SEQ ID No. 22)
<i>Proteus vulgaris</i>	(SEQ ID No. 23)
Zoo Compost Enrichment	(SEQ ID No. 32)
Source	170	180	190	200	210	220	230	240	
<i>E. coli</i>	NVTDAILSRA	GGSIAFTGH	RQTAFRELER	VLNFPQSNLC	LKREKODESC	SLTQALPSEL	KVSADNVSLT	GAVSLASMLT	(SEQ ID No. 17)
<i>Shigella flexnarii</i>	(SEQ ID No. 18)
<i>Shigella sonnei</i>A	.....	(SEQ ID No. 19)
<i>Pasteurella aerogenes</i>	(SEQ ID No. 20)
<i>Enterobacter cloacae</i>	(SEQ ID No. 21)
<i>Enterobacter agglomerans</i>	(SEQ ID No. 22)
<i>Proteus vulgaris</i>F	(SEQ ID No. 23)
Zoo Compost EnrichmentC	(SEQ ID No. 32)

FIG. 20A

REPLACEMENT SHEET

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Source	250	260	270	280	290	300	310	320	
<i>E. coli</i>	EIFLLQQAQG	MPEPCWGRIT	DSHQWNTLLS	LHNAQFYLLQ	RTPEVARSPA	TPLLDLIKTA	LTPHPQKQA	YGVTLPTSVL	(SEQ ID No. 17)
<i>Shigella flexnarii</i>	.....	.....	.....	.....	.....	.....MA	.....	.....	(SEQ ID No. 18)
<i>Shigella sonnei</i>	.....	.....	.....	.....	.....	.....	.....	.....	(SEQ ID No. 19)
<i>Pasteurella aerogenes</i>	.....	.....	.....	.....	.....	.....	.....	.....	(SEQ ID No. 20)
<i>Enterobacter cloacae</i>	.....	.....	N	.....	.....	.....	.....	.....	(SEQ ID No. 21)
<i>Enterobacter agglomerans</i>	.....	.....	.....	.....	.....	.....	.....	.....	(SEQ ID No. 22)
<i>Proteus vulgaris</i>	.....	.....	.....	I	.....	.....	.....	.....	(SEQ ID No. 23)
Zoo Compost Enrichment	.....	.....	s	.....	.....	.....	.....	.....	(SEQ ID No. 32)
Source	330	340	350	360	370	380	390	400	
<i>E. coli</i>	FIAGHDNLA	NLGGALELAW	TLPQPDNTP	PGGEIVFERW	RRLSDNSQWI	QVSLVFOTLQ	QMRDKTPLSL	NTPPGEVKLT	(SEQ ID No. 17)
<i>Shigella flexnarii</i>	.....	F	.....	.....	.....	.....	.....	.....	(SEQ ID No. 18)
<i>Shigella sonnei</i>	.....	.....	.....	.....	.....	.....	.....	.....	(SEQ ID No. 19)
Source	410	420	430	440					
<i>E. coli</i>	LAGCEERNAQ	GMCSLAGFTQ	IVNEARIPAC	SL*					(SEQ ID No. 17)
<i>Shigella flexnarii</i>					(SEQ ID No. 18)
<i>Shigella sonnei</i>					(SEQ ID No. 19)

FIG. 20B

REPLACEMENT SHEET

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1	*	20	*	40	*	60	*	80	
<i>E. coli</i>	ATGAAGCGATCTTAATCCCATTTTATCTCTTCTGATTCGTTAACCCCGCAATCTGCATTCGCTCAGAGTGAGCCGGA								(SEQ ID No. 24)
<i>S. flex.</i>	-----								(SEQ ID No. 25)
<i>S. sonn.</i>	-----								(SEQ ID No. 26)
<i>P. aero.</i>	-----								(SEQ ID No. 27)
<i>E. cloa.</i>	-----								(SEQ ID No. 28)
<i>E. aggl.</i>	-----								(SEQ ID No. 29)
<i>P. vulg.</i>	-----								(SEQ ID No. 30)
compost	-----								(SEQ ID No. 33)

	*	100	*	120	*	140	*	160	
<i>E. coli</i>	GCTGAAGCTGGAAAGTGTGGTGATGTGTCAGTCGTGATGGTGCTGCCAAGCCACGCAACTGATGCAGGATG								(SEQ ID No. 24)
<i>S. flex.</i>	-----								(SEQ ID No. 25)
<i>S. sonn.</i>	-----								(SEQ ID No. 26)
<i>P. aero.</i>	-----								(SEQ ID No. 27)
<i>E. cloa.</i>	-----								(SEQ ID No. 28)
<i>E. aggl.</i>	-----								(SEQ ID No. 29)
<i>P. vulg.</i>	-----								(SEQ ID No. 30)
compost	-----								(SEQ ID No. 33)

	*	180	*	200	*	220	*	240	
<i>E. coli</i>	TCACCCAGACGCATGGCCAACTGGCCGGTAAAACTGGGTGGCTGACACCGCGCGGTGGTGAGCTAATCGCCTATCTC								(SEQ ID No. 24)
<i>S. flex.</i>	-----								(SEQ ID No. 25)
<i>S. sonn.</i>	-----								(SEQ ID No. 26)
<i>P. aero.</i>	-----								(SEQ ID No. 27)
<i>E. cloa.</i>	-----								(SEQ ID No. 28)
<i>E. aggl.</i>	-----								(SEQ ID No. 29)
<i>P. vulg.</i>	-----								(SEQ ID No. 30)
compost	-----								(SEQ ID No. 33)

FIG. 21A

REPLACEMENT SHEET

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	*	260	*	280	*	300	*	320
<i>E. coli</i>		GGACATTACCAACGCCAGCGTCTGGTAGCCGACGGATTGCTGGCGAAAAAGGGCTGCCCGCAGTCTGGTCAGGTCGCGAT						(SEQ ID No. 24)
<i>S. flex.</i>		-----G-----A-----T-----C-----						(SEQ ID No. 25)
<i>S. sonn.</i>		-----						(SEQ ID No. 26)
<i>P. aero.</i>		-----						(SEQ ID No. 27)
<i>E. cloa.</i>		-----G-----A-----T-----C-----						(SEQ ID No. 28)
<i>E. aggl.</i>		-----						(SEQ ID No. 29)
<i>P. vulg.</i>		-----						(SEQ ID No. 30)
compost		-----						(SEQ ID No. 33)

	*	340	*	360	*	380	*	400
<i>E. coli</i>		TATTGCTGATGTCGACGAGCGTACCCGTAAACAGGCGAAGCCTTCGCCCGCGGCTGGCACCTGACTGTGCAATAACCG						(SEQ ID No. 24)
<i>S. flex.</i>		-----						(SEQ ID No. 25)
<i>S. sonn.</i>		-----						(SEQ ID No. 26)
<i>P. aero.</i>		-----						(SEQ ID No. 27)
<i>E. cloa.</i>		-----						(SEQ ID No. 28)
<i>E. aggl.</i>		-----						(SEQ ID No. 29)
<i>P. vulg.</i>		-----						(SEQ ID No. 30)
compost		-----						(SEQ ID No. 33)

	*	420	*	440	*	460	*	480
<i>E. coli</i>		TACATACCCAGGCAGATACGTCCAGTCCCGATCCGTTATTAAATCCTCTAAAAAACTGGCGTTTGCCCAACTGGATAACCGCG						(SEQ ID No. 24)
<i>S. flex.</i>		-----T-----						(SEQ ID No. 25)
<i>S. sonn.</i>		-----T-----						(SEQ ID No. 26)
<i>P. aero.</i>		-----T-----						(SEQ ID No. 27)
<i>E. cloa.</i>		-----						(SEQ ID No. 28)
<i>E. aggl.</i>		-----						(SEQ ID No. 29)
<i>P. vulg.</i>		-----T-----						(SEQ ID No. 30)
compost		-----						(SEQ ID No. 33)

FIG. 21B

REPLACEMENT SHEET

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*	500	*	520	*	540	*	560
<i>E. coli</i>	AACGTGACTGACGCGATCCTCAGCAGGGCAGGAGGGTCAATTGCTGACTTTACCGGGCATCGGCAACGGCGTTTCGCGA						(SEQ ID No. 24)
<i>S. flex.</i>	-----						(SEQ ID No. 25)
<i>S. sonn.</i>	-----						(SEQ ID No. 26)
<i>P. aero.</i>	-----						(SEQ ID No. 27)
<i>E. cloa.</i>	-----						(SEQ ID No. 28)
<i>E. aggl.</i>	-----						(SEQ ID No. 29)
<i>P. vulg.</i>	-----						(SEQ ID No. 30)
compost	-----						(SEQ ID No. 33)

*	580	*	600	*	620	*	640
<i>E. coli</i>	ACTGGAACGGGTGCTTAATTTCCGCAATCAAACTTGTGCCTTAAACGTGAGAAACAGGACGAAAGCTGTTTCATTAAACGC						(SEQ ID No. 24)
<i>S. flex.</i>	-----						(SEQ ID No. 25)
<i>S. sonn.</i>	-----						(SEQ ID No. 26)
<i>P. aero.</i>	-----						(SEQ ID No. 27)
<i>E. cloa.</i>	-----						(SEQ ID No. 28)
<i>E. aggl.</i>	-----						(SEQ ID No. 29)
<i>P. vulg.</i>	-----T-----						(SEQ ID No. 30)
compos.	-----						(SEQ ID No. 33)

*	660	*	680	*	700	*	720
<i>E. coli</i>	AGGCATTACCATCGGAACCTCAAGTGAGCGCCGACAATGTCTCATTAAACCGGTGCGGTAAGCCCTCGCATCAATGCTGACG						(SEQ ID No. 24)
<i>S. flex.</i>	-----						(SEQ ID No. 25)
<i>S. sonn.</i>	-----G-----						(SEQ ID No. 26)
<i>P. aero.</i>	-----						(SEQ ID No. 27)
<i>E. cloa.</i>	-----						(SEQ ID No. 28)
<i>E. aggl.</i>	-----						(SEQ ID No. 29)
<i>P. vulg.</i>	-----						(SEQ ID No. 30)
compost	-----C-----						(SEQ ID No. 33)

FIG. 21C

REPLACEMENT SHEET

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	*	740	*	760	*	780	*	800
<i>E. coli</i>	GAGATATTCTCTGCAACAAGCACAGGGAATGCCCGGAGCCGGGTGGGAAGGATCACCGATTACACCAAGTGGAACAC							(SEQ ID No. 24)
<i>S. flex.</i>	-----							(SEQ ID No. 25)
<i>S. sonn.</i>	-----			-A-				(SEQ ID No. 26)
<i>P. aero.</i>	-----							(SEQ ID No. 27)
<i>E. cloa.</i>	-----			-A-		-A-		(SEQ ID No. 28)
<i>E. aggl.</i>	-----			-A-				(SEQ ID No. 29)
<i>P. vulg.</i>	-----							(SEQ ID No. 30)
compost	-----							(SEQ ID No. 33)

	*	820	*	840	*	860	*	880
<i>E. coli</i>	CTTGCTAAGTTTGCATAACGCGCAATTTTATTGCTACAACGCACGCCAGAGGTTGCCCGCAGCCGCGCCACCCCGTTAT							(SEQ ID No. 24)
<i>S. flex.</i>	-----							(SEQ ID No. 25)
<i>S. sonn.</i>	-----							(SEQ ID No. 26)
<i>P. aero.</i>	-----							(SEQ ID No. 27)
<i>E. cloa.</i>	-----							(SEQ ID No. 28)
<i>E. aggl.</i>	-----							(SEQ ID No. 29)
<i>P. vulg.</i>	-----			-A-				(SEQ ID No. 30)
compost	-----							(SEQ ID No. 33)

	*	900	*	920	*	940	*	960
<i>E. coli</i>	TAGATTGATCAAGACAGCGTTGACGCCCCCATCCACCGCAAAACAGGCGTATGGTGTGACATTACCCACTTCAGTGCTG							(SEQ ID No. 24)
<i>S. flex.</i>	-G-----T-G-----							(SEQ ID No. 25)
<i>S. sonn.</i>	-----							(SEQ ID No. 26)
<i>P. aero.</i>	-----							(SEQ ID No. 27)
<i>E. cloa.</i>	-----							(SEQ ID No. 28)
<i>E. aggl.</i>	-----							(SEQ ID No. 29)
<i>P. vulg.</i>	-----							(SEQ ID No. 30)
compost	-----							(SEQ ID No. 33)

FIG. 21D

REPLACEMENT SHEET

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	*	980	*	1000	*	1020	*	1040	
<i>E. coli</i>		TTTATCGCCGGACACGATACTAATCTGGCAAATCTCGCGGGCGCACTGGAGCTCAACTGGACGCTTCCCGGTCAGCCGGA							(SEQ ID No. 24)
<i>S. flex.</i>		-----T-----							(SEQ ID No. 25)
<i>S. sonn.</i>		-----							(SEQ ID No. 26)
<i>P. aero.</i>		-----							(SEQ ID No. 27)
<i>E. cloa.</i>		-----							(SEQ ID No. 28)
<i>E. aggl.</i>		-----							(SEQ ID No. 29)
<i>P. vulg.</i>		-----							(SEQ ID No. 30)
compost		-----							(SEQ ID No. 33)

	*	1060	*	1080	*	1100	*	1120	
<i>E. coli</i>		TAACACGCCCGCAGGTGGTGAACCTGGTGTGTTGAACGCTGGCGTCGGCTAAGCGGATAACAGCCAGTGGATTTCAGGTTTCGC							(SEQ ID No. 24)
<i>S. flex.</i>		-----							(SEQ ID No. 25)
<i>S. sonn.</i>		-----							(SEQ ID No. 26)
<i>P. aero.</i>		-----							(SEQ ID No. 27)
<i>E. cloa.</i>		-----							(SEQ ID No. 28)
<i>E. aggl.</i>		-----							(SEQ ID No. 29)
<i>P. vulg.</i>		-----							(SEQ ID No. 30)
compost		-----							(SEQ ID No. 33)

	*	1140	*	1160	*	1180	*	1200	
<i>E. coli</i>		TGGTCTTCCAGACTTTACAGCAGATGCGTGATAAAACGCCGCTGTGTCATTAAATACGCCGCCGGAGAGGTGAAACTGACC							(SEQ ID No. 24)
<i>S. flex.</i>		-----							(SEQ ID No. 25)
<i>S. sonn.</i>		-----							(SEQ ID No. 26)
<i>P. aero.</i>		-----							(SEQ ID No. 27)
<i>E. cloa.</i>		-----							(SEQ ID No. 28)
<i>E. aggl.</i>		-----							(SEQ ID No. 29)
<i>P. vulg.</i>		-----							(SEQ ID No. 30)
compost		-----							(SEQ ID No. 33)

FIG. 21E

REPLACEMENT SHEET

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	*	1220	*	1240	*	1260	*	1280
<i>E. coli</i>	CTGGCAGGATGTGAAGAGCGAAATGCCGAGGCGCATGTGTTTCGTTGGCAGGTTT	TACGCAAAATCGTGAATGAAGCACGCAT	(SEQ ID No. 24)					
<i>S. flex.</i>	-----	-----	(SEQ ID No. 25)					
<i>S. sonn.</i>	-----	-----	(SEQ ID No. 26)					
<i>P. aero.</i>	-----	-----	(SEQ ID No. 27)					
<i>E. cloa.</i>	-----	-----	(SEQ ID No. 28)					
<i>E. aggl.</i>	-----	-----	(SEQ ID No. 29)					
<i>P. vulg.</i>	-----	-----	(SEQ ID No. 30)					
compost	-----	-----	(SEQ ID No. 33)					

	*	1309	
<i>E. coli</i>	ACCGGCGTGCAGTTTGTA	(SEQ ID No. 24)	
<i>S. flex.</i>	-----^^^	(SEQ ID No. 25)	
<i>S. sonn.</i>	-----^^^	(SEQ ID No. 26)	
<i>P. aero.</i>	-----	(SEQ ID No. 27)	
<i>E. cloa.</i>	-----	(SEQ ID No. 28)	
<i>E. aggl.</i>	-----	(SEQ ID No. 29)	
<i>P. vulg.</i>	-----	(SEQ ID No. 30)	
compost	-----	(SEQ ID No. 33)	

FIG. 21F